COOKIES FOR ALL!

Suggested Grade

4

SD Mathematics Strand & Standard *(Primary for Task)*

Algebra

4.A.3.1. Students are able to write and solve number sentences that represent one-step word problems using whole numbers

Task Summary

Students will create an original story that includes the use of number sentences.

Materials Needed

"The Doorbell Rang" by Pat Hutchins; Writing paper; Drawing paper a visual aid

Time and Context of Task

1-2 class periods

Author and Lead Teacher for this Task

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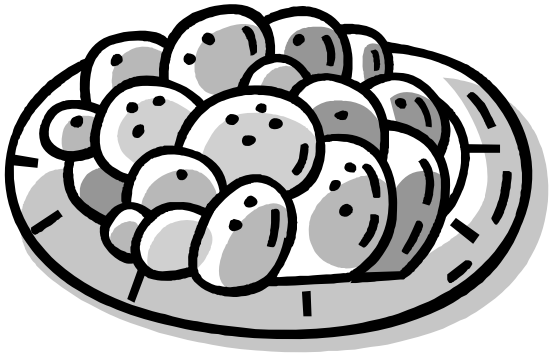
COOKIES FOR ALL!

In the story, "The Doorbell Rang", by Pat Hutchins, the children have to continually do math to determine how many cookies each person should have. Create an original story that follows the same format as "The Doorbell Rang", using number sentences to tell the story. Create a visual aid to show the math in your story. Share your story with a small group of classmates, while they write the number sentences that go with your story. Check their number sentences with your model to see if your story follows the format of "The Doorbell Rang".

Personal reflection:
Were your group member's number sentences accurate to the model you created from your story? Why or why not?



CONTENT STANDARDS

Primary Standard

Strand Name: Algebra

SD Goal: Students will use the language of algebra to explore, describe, represent, and analyze number expressions and relations that represent variable quantities.

Indicator: Interpret and develop mathematical models

Standard: 4.A.3.1. Students are able to write and solve number sentences that represent one-step word problems using whole numbers.

NCTM Process Standard

Connections: Recognize and apply mathematics in context outside of mathematics

Problem-Solving Strategies

Looking for patterns

ASSESSMENT TOOLS

Task Rubric

Standard	Advanced	Proficient	Basic	Below Basic
4.A.3.1. Students are able to write and solve number sentences that represent one-step word problems using whole numbers.	Student writing is creative, and their mathematical thinking is clear and easily understood. The model of the mathematics that goes with their writing is accurate, and shows more that one way of computing the number sentences.	Student writing is clear and it is easy to follow the mathematical thinking it their story. The model of the mathematics that goes with their writing is accurate. One operation is shown in the model.	Student writing somewhat follows the format, but is difficult to follow. The mathematical thinking is confused, and the model shows errors in calculations.	Student writing does not follow the format. Student writing does not contain mathematical thinking. The model that goes with the student writing has errors, or is not there.
NCTM Connections: Recognize and apply mathematics in context outside of mathematics	The mathematical model of the number sentences was accurate, and demonstrated more than one way of solving the problems.	The mathematical model of the number sentences was accurate.	The mathematical model of the number sentences was inaccurate.	The mathematical model of the number sentences was incomplete.

Fourth Grade Algebra
Performance Descriptors

Advanced	**Fourth grade students performing at the advanced level:** • solve algebraic equations using inverse operations and order of operations with addition and subtraction using whole numbers; • solve word problems by converting them to algebraic statements; • create patterns to solve problems and justify their solution.
Proficient	**Fourth grade students performing at the proficient level:** • use the commutative property of addition and multiplication; • identify and complete patterns and describe the associated rule; • write and solve number sentences using whole numbers; • simplify a two-step equation using whole numbers; • show relationships between all operations; • simplify whole number expressions in all operations; • select appropriate relational symbols to make number sentences true.
Basic	**Fourth grade student performing at the basic level:** • show relationship between addition and subtraction; • simplify whole number expressions in addition and subtraction; • using whole numbers, solve number sentences.

Fourth Grade Algebra
ELL Performance Descriptors

Proficient	**Fourth grade ELL students performing at the proficient level:** • write and solve number sentences that represent word problems; • use variables as place holders in number sentences; • recognize simple patterns; • identify and complete patterns and describe the associated rule; • read, write, and speak the language of mathematics.
Intermediate	**Fourth grade ELL students performing at the intermediate level:** • solve simple number sentences using the four basic operations and a model; • create numerical expressions from oral or written contexts; • explain in mathematical terms the sequence of steps in solving two-step problems; • give simple oral or written responses to directed questions on topics presented in class.
Basic	**Fourth grade ELL students performing at the basic level:** • write numerals and mathematics symbols; • solve problems using addition, subtraction, and multiplication; • recognize and use basic algebraic terms; • respond to yes or no questions and to problems presented pictorially or numerically in class.
Emergent	**Fourth grade ELL students performing at the emergent level:** • begin to use number sentences using symbolic representations; • give simple oral responses to directed questions on topics presented in class; • copy and write numerals and mathematics symbols; • imitate pronunciation of numbers and mathematical terms; • use non-verbal communication to express mathematical ideas.
Pre-emergent	**Fourth grade ELL students performing at the pre-emergent level:** • observe and model appropriate cultural and learning behaviors from peers and adults; • listen to and observe comprehensible instruction and communicate understanding non-verbally.

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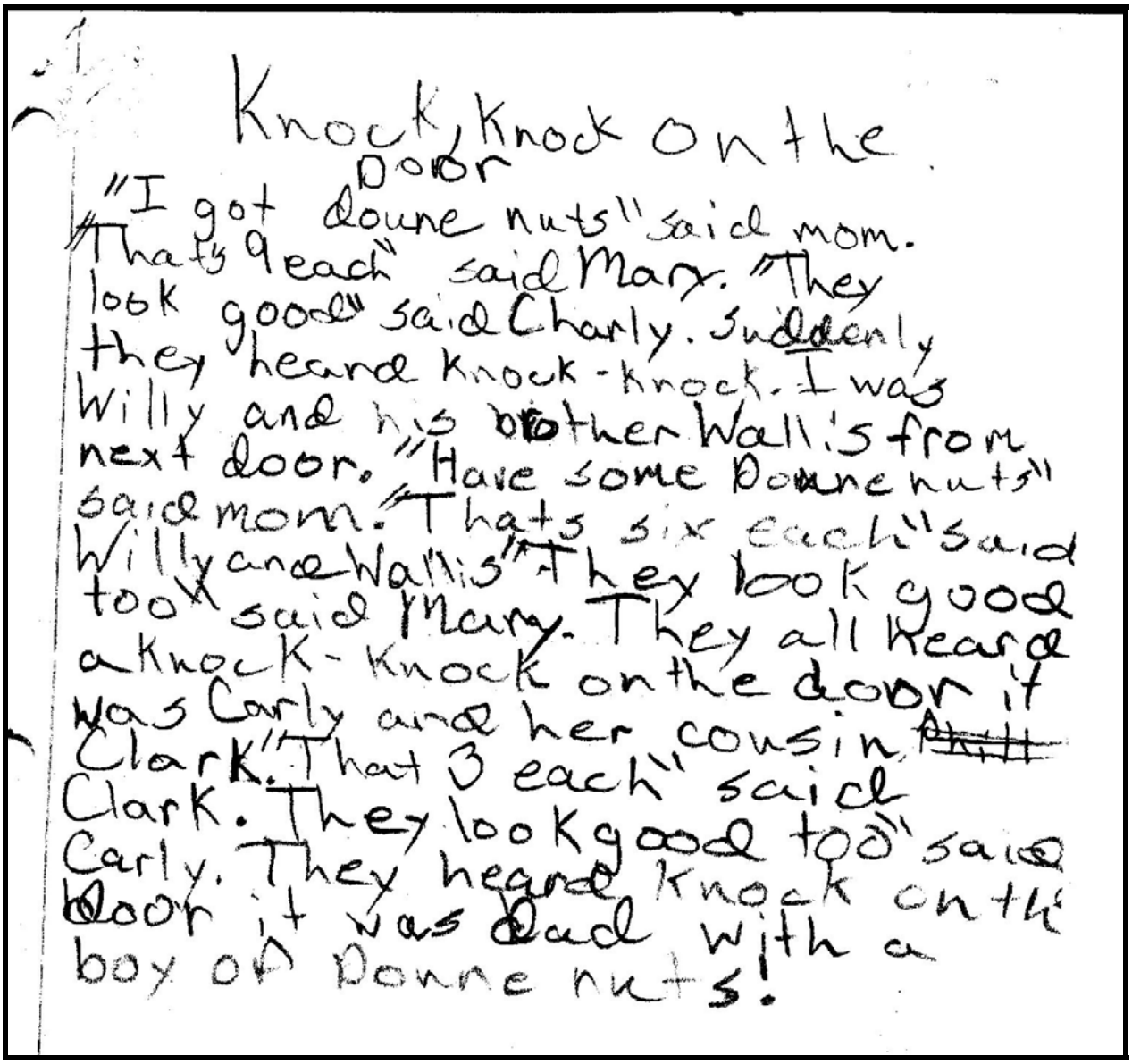
Student Work Samples

As you examine the samples, consider the following questions:

- In light of the standard/s addressed and the assessment tools provided, what evidence does the work provide that students are achieving proficiency in the knowledge and skills addressed by the standard/s for the task?
- Is the task/activity well designed to help students acquire knowledge and demonstrate proficiency? Is the task/activity clearly aligned with the standards? In what ways would you adapt the task/activity to better meet the needs of your students?

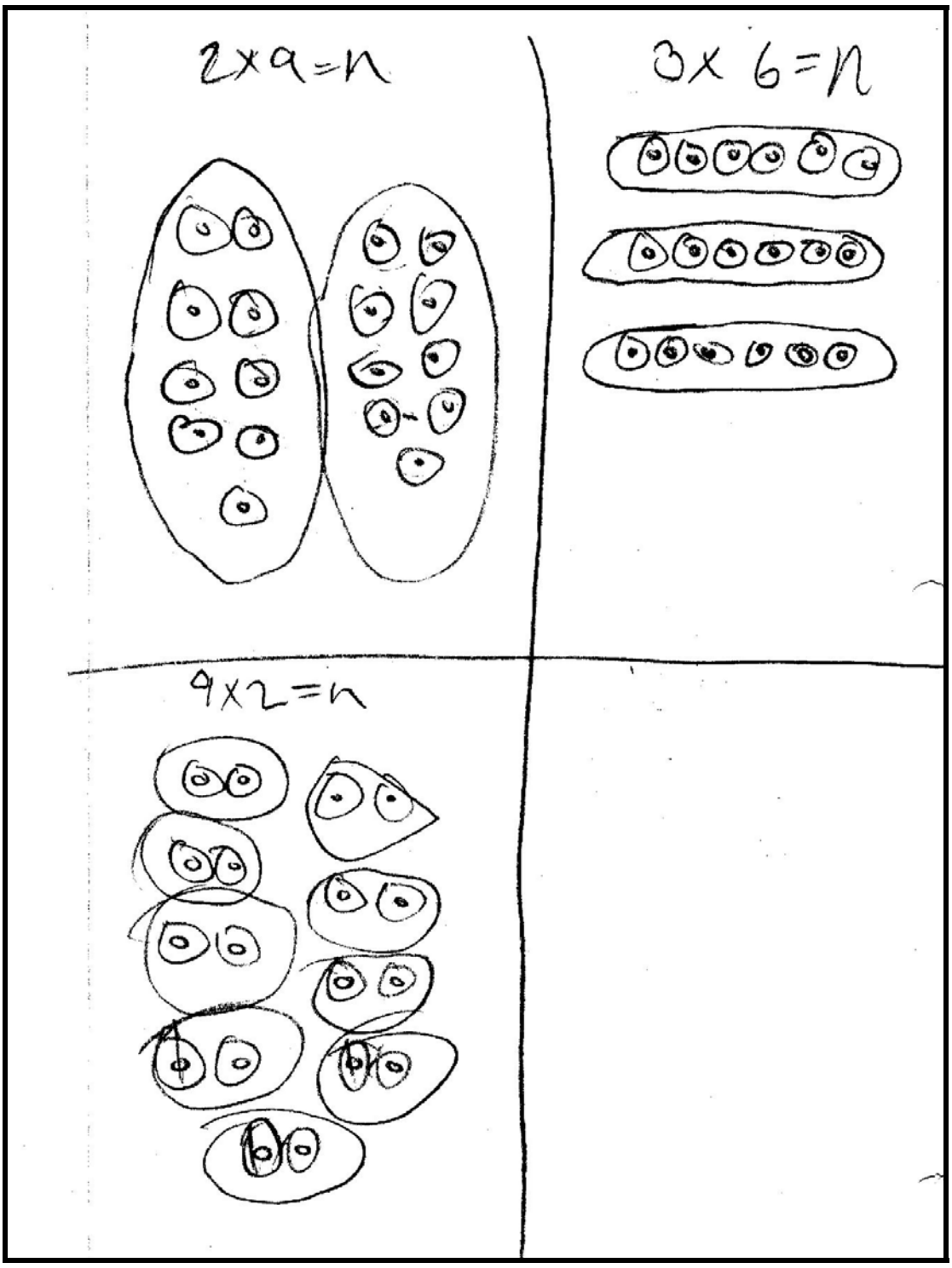
Student Work Sample #1
Page 1



Knock, Knock on the Door

"I got doune nuts" said mom. "That's 9 each" said Max. "They look good" said Charly. Suddenly they heard knock-knock. It was Willy and his brother Wallis from next door. "Have some Doune nuts" said mom. "That's six each" said Willy and Wallis "They look good too" said Mary. They all heard a knock-knock on the door it was Carly and her cousin Clark. "That 3 each" said Clark. They look good too" said Carly. They heard knock on the door it was Dad with a boy or Doune nuts!

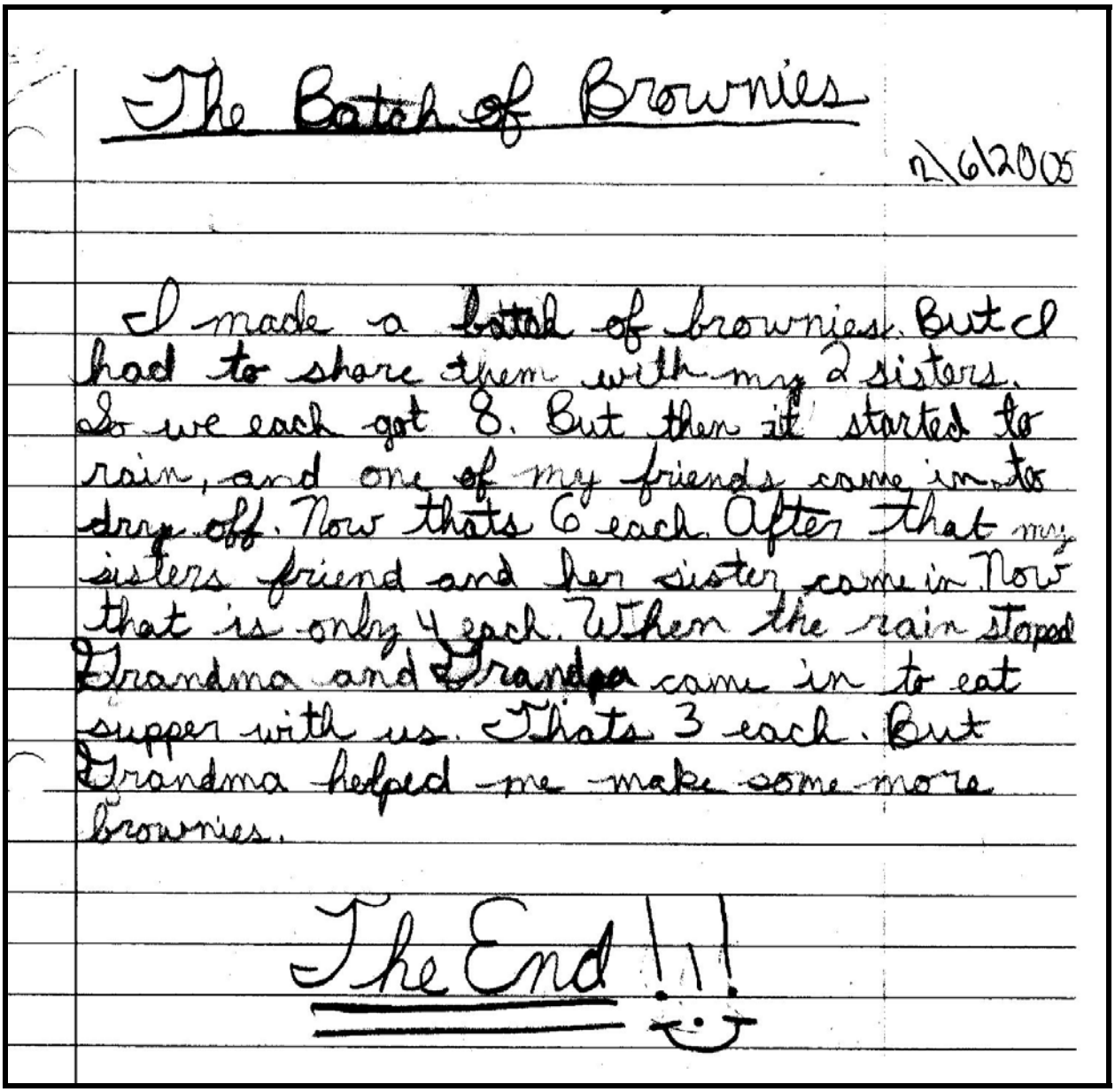
Sample #1 – Page 2



Looking at Student Work – Instructor notes and rating for work sample #1:

Proficient. Story follows the correct format and the model is accurate.

Student work Sample #2
Page 1

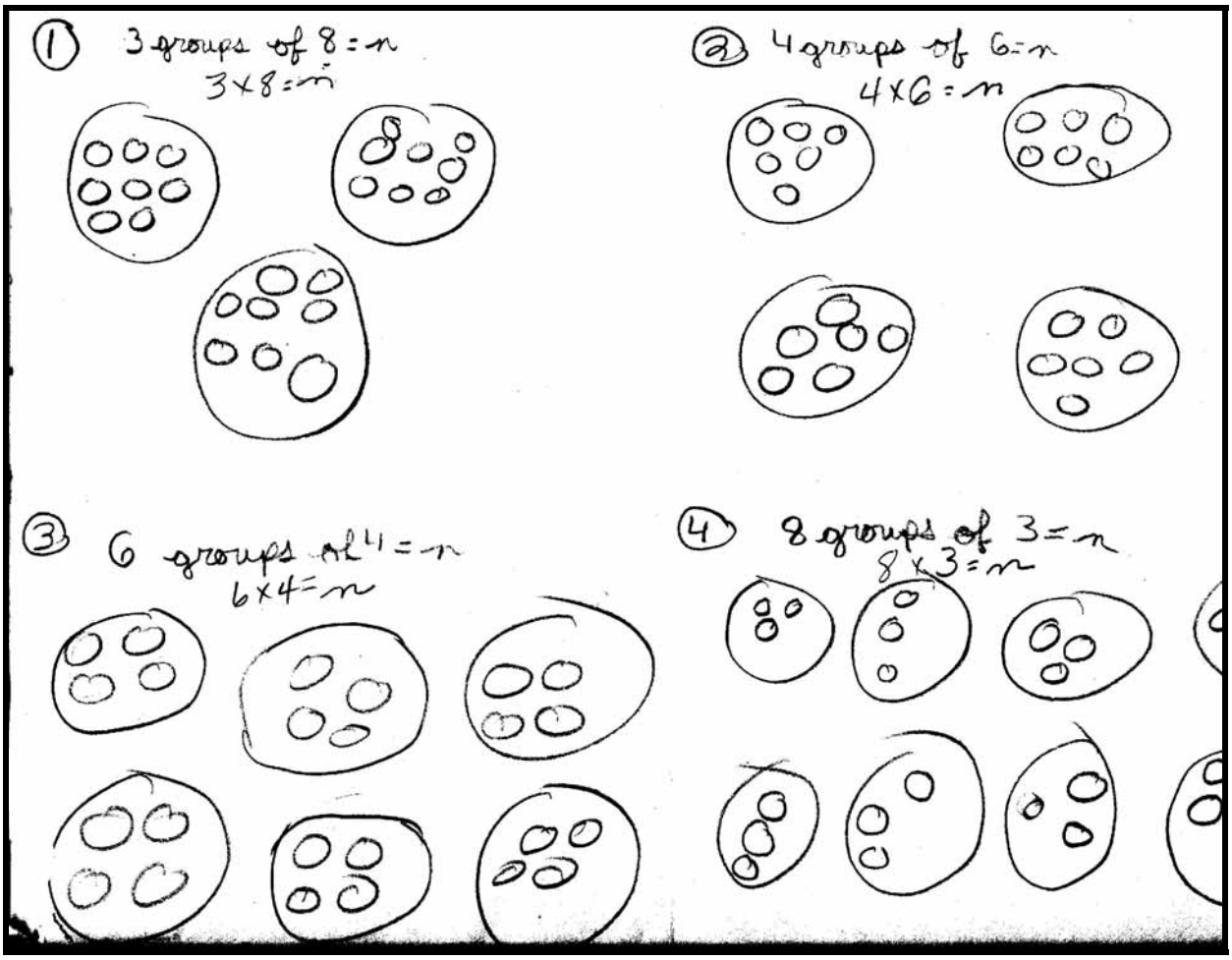

The Batch of Brownies

2/6/2005

I made a batch of brownies. But I had to share them with my 2 sisters. So we each got 8. But then it started to rain, and one of my friends came in to dry off. Now thats 6 each. After that my sisters friend and her sister came in. Now that is only 4 each. When the rain stoped Grandma and Grandpa came in to eat supper with us. Thats 3 each. But Grandma helped me make some more brownies.

The End !!!

Sample #2 – Page 2



Looking at Student Work – Instructor notes and rating for work sample #2:

Advanced. Creative and clear mathematical thinking. There is more than one way to show the number sentence.

INSTRUCTIONAL NOTES

Teacher Resources

The Doorbell Rang, by Pat Hutchin

Ma has made some cookies for her two children. There are twelve cookies, but then company continues to arrive. With each new arrival, the number of cookie-eaters changes, and the children have to determine how many cookies each person should receive.

Student Resources

Multiple copies of the book to have in the classroom as a reference for students while they create their own story.

Resources

SD Mathematics Content Standards
http://www.doe.sd.gov/contentstandards/math/index.asp

SD Assessment and Testing
http://www.doe.sd.gov/octa/assessment/index.asp

The National Assessment of Educational Progress (NAEP)
http://www.doe.sd.gov/octa/assessment/naep/index.asp

National Council of Teachers of Mathematics
http://nctm.org/

Looking at Student Work
http://www.lasw.org/index.html